

## Maths Problem Solving Challenges

Each week, three levels of mathematical problems from a variety of collections and sources will be posted here. The following week, sample solutions or marking guides for the previous week's problem will be posted along with a set of new challenges.

These problems are for your enjoyment and personal challenge (some of them may be really tricky, others only moderately so). They do not form part of the official curriculum. The solutions are provided so that you can review your own work and see where you went right (and possibly wrong).

This week's problems come from the book 'Mathematics Assessment for Learning: Rich Tasks and Work Samples' by Downton, Knight, Clarke and Lewis.

Good Luck

### Granny's Rug



My granny bought a square rug for her hallway and each side measured one metre. When she got it home it would not fit in the hallway, so she cut the rug up and joined the pieces together again to make the shape that would fit, using all the rug. What might her rug look like now?

Make Granny's original rug from newspaper and work out the area. Now cut it up to make a rug that might fit. What does it look like and what is the area and perimeter of the rug?

Draw a diagram of what Granny's rug might look like now and write about what you did and what you found out.

Record the answers for three different possible solutions for this problem.

NB. There are many possible solutions to this problem and no one solution is 'more correct' than another. The idea is to explore some of the possibilities.

## Middle

### Sharing 25

In each situation below, four friends want to “share 25” as equally as possible. Show or explain how to “share 25” in each situation.

1. Four friends shared 25 balloons as equally as possible.



2. Four friends shared \$25 as equally as possible.



3. Four friends shared 25 biscuits as equally as possible.



## Junior

### Family Ages

You will need five small pieces of paper.

Draw the following on the pieces of paper; a teenager, a Primary School child, a parent, a baby, a grandparent (for very young mathematicians whose drawings may be quite similar, ask them to draw some distinguishing clothing on each (e.g. a nappy on the baby))

Write how old each person is (in years) and order their drawings from youngest to oldest.

Explain why you think your ages are correct.